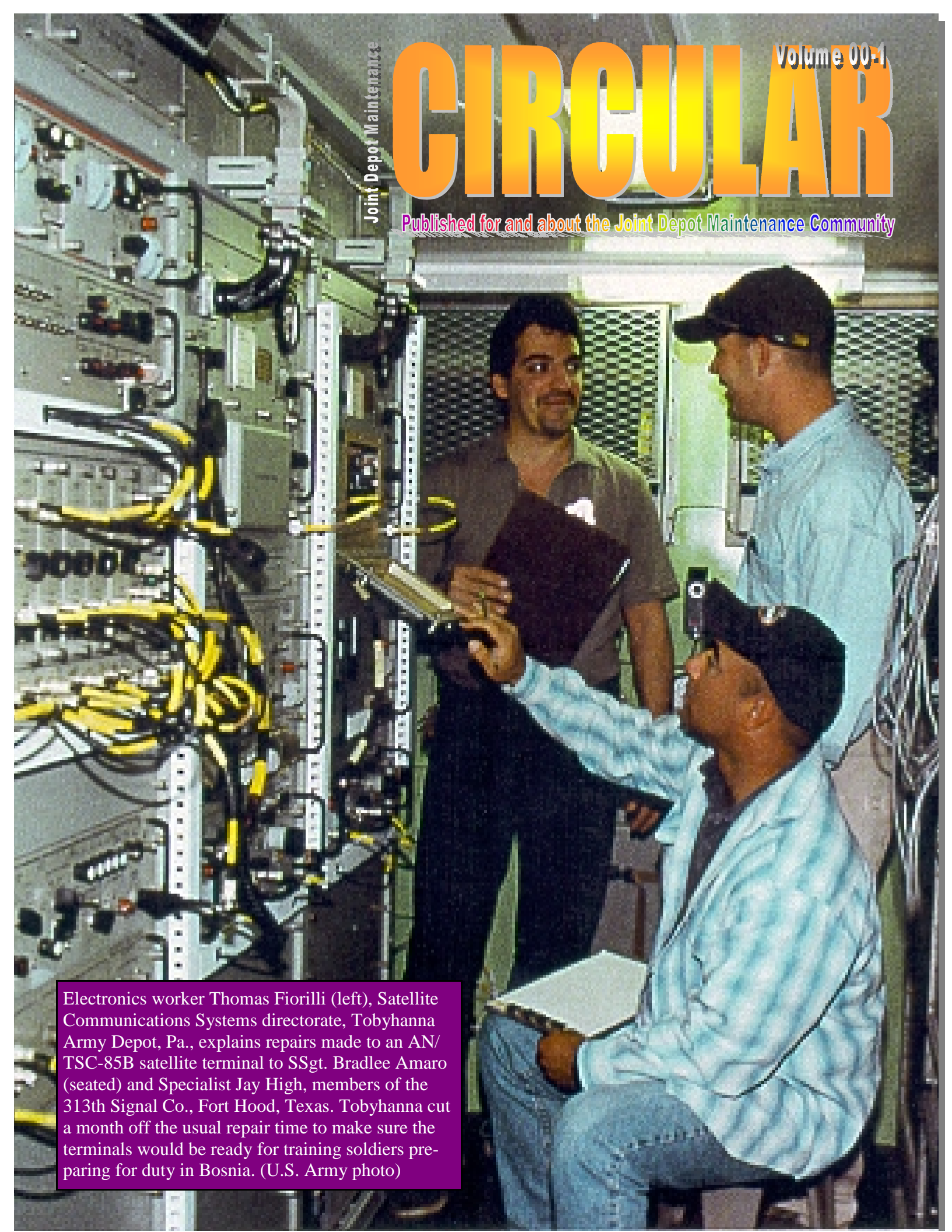


Joint Depot Maintenance

CIRCULAR

Volume 00-1

Published for and about the Joint Depot Maintenance Community



Electronics worker Thomas Fiorilli (left), Satellite Communications Systems directorate, Tobyhanna Army Depot, Pa., explains repairs made to an AN/TSC-85B satellite terminal to SSgt. Bradlee Amaro (seated) and Specialist Jay High, members of the 313th Signal Co., Fort Hood, Texas. Tobyhanna cut a month off the usual repair time to make sure the terminals would be ready for training soldiers preparing for duty in Bosnia. (U.S. Army photo)



Larry Benson, a welder for the Maintenance Center Welding Shop at Marine Corps Logistics Base, Albany, Ga., performs a weld during a certification test. An Arc Agent 2000 weld monitor allows him to determine the quality of his weld as he works. (Photo by Sgt. Jonathan C. Moor)

Helmet-mounted monitor improves Marine Corps welding process

Whether you're a passenger on an aircraft or the purchaser of a brand new vehicle, you'd probably feel safer if you knew that potential structural problems were being detected and corrected early in the manufacturing process. You'd feel even better if you knew the people who built the parts you relied on were trained and certified to strive for perfection.

If you think this type of reliability is too good to be true, the folks in the Maintenance Center welding shop at Marine Corps

Logistics Base (MCLB), Albany, Ga., believe it's possible. They're perfecting their welding techniques with the help of an Arc Agent 2000 arc weld monitor. The monitor gathers information about the welding techniques being used by the welders, and it provides the following benefits:

- Reduces costly repairs and rework.
- Accelerates training.
- Helps find failing equipment.
- Reduces costs associated with analyzing data by eliminating downtime.

The Maintenance Center installed the monitor after a Commercial Technologies for Maintenance Activities (CTMA) project, designed to make the welding shop competitive with commercial shops, revealed problems with Albany's welding processes.

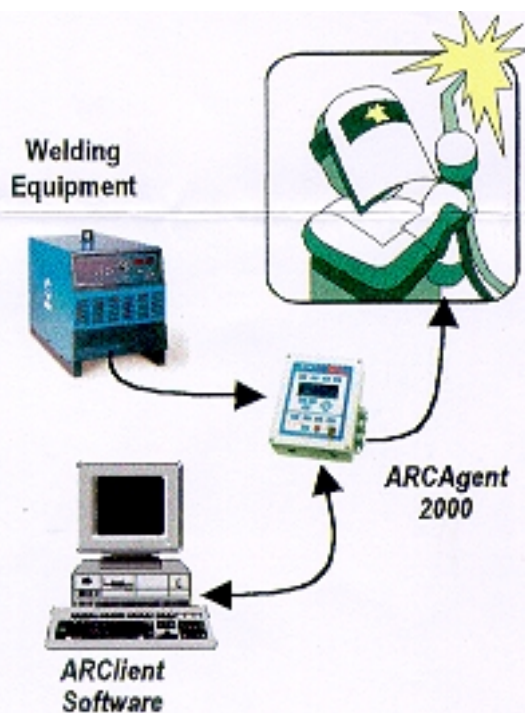
Since welding techniques and quality can vary by individual, Albany needed a way for welders to ensure consistency in their work. The Arc Agent 2000 is the solution. It uses sensors at the point of the weld and on the welding equipment to monitor the gas-metal arc weld process, including voltage, current, wire feed, and gas flow.

By monitoring these areas, welders can figure out if the methods they use are stable and efficient or if they need to change their welding techniques. They can use the monitor to analyze the process for anomalies and deviations without waiting for a lot of data analysis to make corrections. They receive feedback about their work as they weld.

"The welder's work is being electronically monitored as he does it," said Ron Vargo, head of the Engineering Support Branch. Two light-emitting diodes (LED) in the welder's helmet give him or her real-time information about the quality of the job.

A red seven-segment LED bar graph shows the average current of the weld and where it falls between the upper- and lower-limit settings. This information is used to train welders.

"We're using it to collect data determining differences between the welders with the assumption that certain welders are performing their welds at a higher level of quality



than others," explained Vincent Romano, an engineer with Impact Welding. "Those differences distinguish what kind of technique can be improved to enhance the skill of the less experienced welders."

The Arc Agent 2000 converts extreme heat and raw elements into well-ordered bits of information to give a logical readout on a computer screen. The data goes to a Windows 95/98 software

application called ARClient that provides printable, high-resolution color graphics of weld signatures and limits.

The CTMA project gave the Marine Corps access to technology that private industry is using; however, funding for the project is "bounded," according to Vargo. That means "there is a set amount of money for a particular project and, after that money is used, no more will be allotted."

For information contact Mr. Vargo, (912) 439-6805/DSN 567-6805.

PUBLISHING AUTHORITY: Publication of this circular is required by direction of the Joint Group on Depot Maintenance as stated in the mission of the Joint Depot Maintenance Activities Group (JDMAG). No special permission is required to quote or reproduce any article or brief in the *Joint Depot Maintenance Circular*. Submissions and inquiries are welcome. For information call (937) 656-2769/DSN 986-2769, or write to JDMAG/MAW, Building 280, Door 24, 4170 Hebble Creek Road, Wright-Patterson AFB, Ohio 45433-5653. Visit the *JDM Circular* on JDMAG's Web site at <http://www.jdmag.wpafb.af.mil>.

Cynthia Cox Underwood, editor

Maintenance symposium focuses on challenges for 21st century

The National Defense Industrial Association (NDIA), in conjunction with the Office of the Secretary of Defense (OSD), recently sponsored the third annual Department of Defense (DOD) Maintenance Symposium and Exhibition in St. Louis. With a theme of “Transforming Maintenance With Technology,” the three-day symposium was uniquely focused on DOD weapon system and equipment maintenance.

According to Roger W. Kallock, Deputy Under Secretary of Defense for Logistics, the theme is very timely. “The military services are working to leverage advanced technical capabilities to more efficiently execute their maintenance responsibilities,” he said. “Maintenance systems for the future are being driven by operational requirements to be even more integrated with the other logistics disciplines, rely increasingly on commercial support, and be more responsive yet significantly less costly.”

In other words, this year’s theme was designed to focus on the transforming role of technology to make maintenance “faster, better, cheaper” in the 21st century. The objective was to address key maintenance challenges and explore common interests for management systems and process technologies that will revolutionize future maintenance operations.

Chaired by Mr. Robert T. Mason, Assistant Deputy Under Secretary of Defense for Maintenance Policy, Programs, and Resources, the symposium



Rear Admiral Select Stephen C. Heilman, assistant commander for naval aviation depots, Naval Air Systems Command, applauds recipients of the Secretary of Defense Maintenance Awards. The awards went to outstanding military maintenance units during the third annual Department of Defense Maintenance Symposium and Exhibition. (JDMAG photos by Cynthia Cox Underwood)

- identified the major management issues for maintenance,
- reviewed management and technical solutions in design or development,
- demonstrated technology applications for maintenance management and processes,
- identified the need for new management tools, research, and products, and
- showcased world-class operations.

More than 600 DOD and private industry representatives shared information, attended briefings and presentations, viewed exhibits, participated in breakout sessions, and toured major local area industries. Attendees also got the opportunity to question senior defense maintenance managers during open-forum discussions.

Highlighting the symposium was the presentation of the Secretary of Defense Maintenance Awards by Dr. Jacques S. Gansler, Under Secretary of Defense for Acquisition, Technology, and Logistics, to outstanding military maintenance units. These awards are presented annually to large, medium, and small units in recognition of the contribution maintenance makes to keeping our forces ready and sustaining them in conflict.

Winners in the Small category:

- 81st Armor Regiment, Fort Knox, Ky.
- Naval Security Group Activity, Groton, Ct.

Winners in the Medium category:

- 660/749th Aircraft Generation Squadrons, Travis AFB, Calif.
- Marine Aviation Logistics Squadron 12, Iwakuni, Japan.

Winners in the Large category:

- 3rd Air Force Wing, Elmendorf AFB, Alaska.
- Shore Intermediate Maintenance Activity (SIMA), Norfolk, Va.



Members of the Shore Intermediate Maintenance Activity, Norfolk, Va., surround the prestigious Phoenix Award. The award was presented during the third annual DOD Maintenance Symposium and Exhibition. It recognizes the most significant weapon system and equipment maintenance achievements within DOD.

MARINE CORPS HOST JTEG

Marine Corps Logistics Base, Albany, Ga., hosted the recent Joint Technology Exchange Group meeting, which addressed the following topics:

- Better Business Practices
- ISO 9000 Certification
- National Center for Manufacturing Sciences (NCMS) technology projects.

The next meeting is tentatively planned for Corpus Christi Army Depot.

To view briefing slides or obtain more JTEG information visit the JDMAG Web site, <http://www.jdmag.wpafb.af.mil>, or contact Steve Siens or Gary Smith, (937) 656-2870/DSN 986-2870.

SIMA Norfolk was also the proud recipient of the prestigious Phoenix Award. This award recognizes the most significant weapon systems and equipment maintenance achievements within DOD.

The Joint Group on Depot Maintenance played a prominent role in the symposium by sponsoring the depot maintenance track. This track included breakout sessions on depot maintenance technologies, partnering, teaming, and technology transfer. The presentations given during these sessions are available on the JDMAG Web site, <http://www.jdmag.wpafb.af.mil>.

For information, contact Steve Siens or Gary Smith, JDMAG, (937) 656-2870/DSN 986-2870.

Aquifer remediation frees trapped solvents in soil at Hill AFB

The environmental folks at Hill AFB, Utah, are cleaning up their own back yard, so to speak. They're using surfactant enhanced aquifer remediation to remove chemical solvents trapped in soil that surrounds a chemical pit used from 1967 to 1975 to receive liquid wastes from industrial shops all over the base.

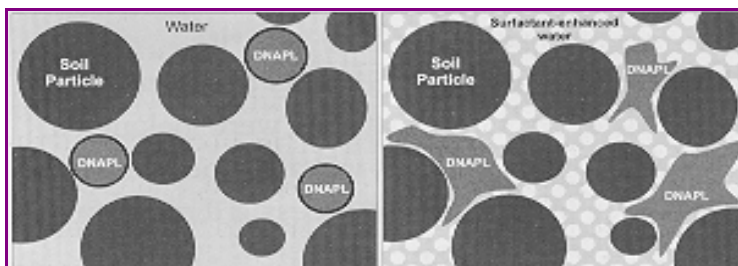
Dr. Jon Ginn, an Air Force environmental engineer who directed the research team at Hill, hopes this technology will be able to remove residual solvents trapped between soil particles in a shallow aquifer and eventually restore use of the aquifer. During tests, the process removed more than 98 percent of the residual solvents -- a figure experts considered unachievable just a few years ago.

The technique uses chemicals called surfactants to break the forces that trap solvent globules in the soil. The surfactants are pumped into the soil from tanker trucks through wells that are submerged about 50 feet under ground, according to Dr. Ginn. "Basically, through a series of piping, networks, flow meters, and controllers," he said, "the surfactant fluids are pumped into the subsurface via conventional well technology."

Once free of the soil, the solvents can be removed using pump-and-treat systems already in place at the site.

THE PROBLEM

For several years during the 1960s and 1970s, workers routinely dumped waste solvents from the base's maintenance facili-



Capillary pressures in the soil at Hill AFB, Utah, make the dense non-aqueous phase liquid (DNAPL) form rigid globules that become wedged between soil particles and are held like glue by interfacial tension. Adding surfactants to the water reduces the interfacial tension, which reduces the capillary pressure. This allows the DNAPL to soften and slip through the pore spaces in the soil.

ties on the ground or in trenches. It's impossible to know the exact quantity of chemicals dumped at Hill and hundreds of other industrial sites around the country, because few records were kept before the enactment of environmental laws in the 1970s.

Still, the Air Force currently estimates at least 50,000 gallons were dumped at Hill. Much of the solvents evaporated into the air, but thousands of gallons seeped into the soil, eventually reaching the water table.

The solvents, primarily trichloroethene (TCE), didn't dissolve well in water. While some TCE was dissolved, much of the liquid solvent sank to the bottom of the shallow aquifer and formed numerous pools on a clay layer about 40 feet under ground. The dumping stopped nearly 25 years ago, but the remaining pools of slowly dissolving solvent continued to contaminate groundwater.

In the late 1980s, Air Force environmental investigations discovered the pools of solvent, called dense non-aqueous phase liq-

uid or DNAPL (pronounced DEE-napple). In 1993, the Air Force built a source recovery system that, to this day, collects and treats both DNAPL and contaminated groundwater. So far the system has collected more than 40,000 gallons of solvent from the site.

Engineers estimate that about 5,000 gallons of solvent still remain under ground. The new technology will allow the Air Force to recover most, if not all, of it.

WHY SURFACTANTS WORK

Residual DNAPL is difficult to remove due to the physical forces of capillary pressure and interfacial tension. Capillary pressure is the same force that draws water into a sponge. Directly influenced by interfacial tension, capillary pressure grabs and holds globules of solvent into the tiny spaces between soil particles.

According to Ginn, the key to removing the residual solvent is to reduce the capillary pressure. That's where surfactants come in. They reduce the interfacial tension between the soil and the solvent, which in turn, reduces the capillary pressures and frees the trapped solvent globules. Then the source recovery system can remove the solvent from the groundwater.

In addition to the source recovery system, other cleanup actions to be used at the site include an underground containment wall around the area of highest contamination, a surface cap to keep water out of the site, and soil vapor extraction to clean up the contaminated soil.

For information contact Dr. Ginn,

COMING UP...

DOD LOGISTICS SYMPOSIUM

The National Defense Industrial Association (NDIA) will host the third annual DOD Logistics Symposium and Exhibition March 13-16 at the Hyatt Regency Crown Center in Kansas City, Mo.

Last year's event brought together more than 300 government and industry participants. This year's theme, "The Integrated Logistics Value Chain —Establishing the Links in Streamlining the Process," offers insight into the changes and challenges faced by industry and government as they streamline their value chains.

For information contact Dawn Collins, (703) 247-2588/dcollins@ndia.org, or visit the NDIA Web site at www.ndia.org.

26th ENVIRONMENTAL SYMPOSIUM & EXHIBITION

The NDIA will host the 26th Environmental Symposium and Exhibition March 27-30 at the Long Beach Convention Center, Long Beach, Calif. The event will provide a national environmental forum focused on sustaining DOD readiness. The theme is "Changes and Challenges in DOD Environmental Priorities."

Register on line at www.ndia.org or contact Katherine Lawrence, klawrence@ndia.org, (703) 247-2577.

JOINT SERVICE CONFERENCE

The Navy has scheduled the next Joint Service Depot Maintenance Conference for April 10-13 at the Hacienda Hotel in San Diego. The theme is "Interservicing in the New Millennium."

For information contact Hal Carter, (301) 757-3050, or Anita Lopez, (301) 757-3052.

(801) 775-6894/DSN 775-6894, or Charles Freeman, Environmental Public Affairs, (801) 775-6951/DSN 775-6951.

NADEP JAX, HOLLOMAN AFB:

Working together means more than just interservicing

After four years of performing depot level maintenance on the Air Force's F404-GE-F1D2 engine, which powers the F-117 Stealth aircraft, Naval Aviation Depot, Jacksonville, Fla., (NADEP JAX) is still exceeding contract requirements. While this makes top Air Force officials happy, said SMSgt Robert Wolff, Headquarters Air Combat Command logistics liaison, "It makes the user, the servicemen at Holloman Air Force Base (home for the F-117), extremely happy."

The failure rate for a NADEP-repaired engine is less than 10 percent, according to SMSgt Keith Brewer, Holloman's propulsion flight chief, "and most of those failures are attributed to transportation problems." He attributes the success of the F-117 in Kosovo, how-

ever, directly to the NADEP.

"From the very beginning," said Wolff, "Jacksonville has stood behind their product and supported their customer, making sure problems were transparent to the user."

Whether a shipping, failure, or supportability concern, the NADEP addresses it before it becomes a problem to the base. "If we request it, they make it happen" said Brewer. "It's fantastic support."

SMSgt. Wolff and Larry Kuhlman, Jacksonville's aircraft engine examiner and a longstanding member of the NADEP's F1D2 engine team, believe the program is a team effort. It's not just the pacesetters at NADEP JAX that make the program work. It's the maintenance personnel at Holloman and Air Force program and liaison personnel too.

Both men agreed that there are only two negative aspects to interservicing. The first, learning each service's terminology, is no longer a problem. The second, receiving funding on time, continues to be a problem. But, who isn't having funding problems these days?

For information contact public affairs specialist Kelly Hinchey, NADEP Jacksonville, (904) 542-3267/DSN 942-3267.

jdmagpeople: FY 99 EOQ

JDMAG recognized the following employees for exceptional performance and contributions to organizational goals and missions. Employees were nominated for this quarterly award based on their work effort and professionalism during fiscal year 1999.

- **Terry Patterson**, logistics management specialist
- **Chris Stang**, administrative assistant
- **Kelly Blakely**, logistics management specialist
- **Mary Ahlborn**, budget analyst